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Serial No.: 10/032,986

SUPPORT FOR AMENDMENTS

Support for the amendments herein can be found in the specification as originally filed (e.g., page 1, line 10 through page 2, line 16; and page 8, lines 11-21) and in the related application Ser. No. 10/033,027. The present amendment intends to remove references to trademarks of Cypress Microsystems, Inc. (see, e.g., M.P.E.P. § 608.01(v)). No new matter is introduced.

REMARKS

Claims 1-34 are presented for consideration in the present application, which is now believed to be in condition for examination. Early notice to that effect is earnestly solicited.

Respectfully submitted,

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A¹² a pop-up window, comprising selection options pertinent to the configuration of said input/output connections; and

a drop-down list comprising selection options pertinent to the configuration of said input/output connections wherein said graphical user interface is enabled to accept user input commands in the process of configuring said programmable device.

20. (AMENDED) A graphical user interface as described in Claim 18, wherein said device configuration window is specifically tailored to program input/output pin configurations on a programmable microcontroller.

A¹³ 21. (AMENDED) A graphical user interface as described in Claim 18, wherein said user-selectable pin-out window is graphically configured in the form of said programmable device.

22. (AMENDED) A graphical user interface as described in Claim 18, wherein said pop-up window comprises selection options pertinent to the configuration of the input/output pins of said programmable device.

VERSION OF AMENDMENTS WITH CHANGES SHOWN:

IN THE SPECIFICATION

Please replace the paragraph beginning at page 2, line 3 with the following:

Each of these architectures, originally programmed once for a specific function which would be a device's only function for its lifetime, has begun to be implemented in a reprogrammable form. A programmable logic device can now be re-programmed in operation and can fulfill the functions of many different devices. [The most complex of the reprogrammable logic devices is the

programmable system-on-a-chip, or PSOC, which can be implemented as any of a limitless number of devices, anywhere from simple logic gates to those as complex as microcontrollers.]

Please replace the paragraph beginning at page 2, line 12 with the following:

The complexity of a programmable [device, most particularly a PSOC,] device requires complex programming of each of its configurations which can be stored. Each stored configuration reprogramming can be accomplished “on the fly” by applying the stored configuration to the device.

Please replace the paragraph beginning at page 3, line 12 with the following:

A need exists, therefore, for a method for programming highly complex programmable devices, [such as PSOCs,] particularly for configuring I/O pins [different] differently for each programmed device configuration. Furthermore, such a method must be much more user-friendly than currently available, enabling a user of normal skills to configure enormously complex programmable devices with multiple configurations.

Please replace the paragraph beginning at page 4, line 2 with the following:

Disclosed herein is a method for programming highly complex programmable devices, [such as PSOCs,] and particularly for configuring input/output (I/O) pins to accommodate different programmed device configurations. The method is much more user-friendly than currently available, enabling a user of normal skills to configure enormously complex programmable devices with multiple configurations.

Please replace the paragraph beginning at page 8, line 11 with the following:

The particular embodiment of the present invention discussed here employs a portion of a graphical user interface (GUI) to facilitate the configuration of I/O pins in a microcontroller software

design tool. Note that a microcontroller is one of many different possible configurations for a [PSOC] programmable device and for some other programmable logic devices. Other configurations [of PSOCs] and, indeed, other types of programmable devices could [be] benefit equally [benefited by] from use of the concepts employed in this embodiment. It should also be noted that the GUI employed in this embodiment is one developed specifically for configuring [PSOCs] programmable microcontrollers, but other GUIs could also incorporate this embodiment of the present invention.

Please replace the paragraph beginning at page 9, line 16 with the following:

Important to a concept involving a graphical user interface, display device 105 is also connected to the bus. Similarly connected are alpha-numeric input device 106, cursor control 107, and signal I/O device 108. Signal I/O device 108 could be implemented as a serial connection, USB, an infrared transceiver or an RF transceiver. The configuration of the devices to which this embodiment of the present invention applies may vary, depending on the specific tasks undertaken. In every case, however, display device 105 and cursor control 107 would be implemented in one form or other. It is highly probable that some implementation of interconnect/programming device 111 would also be connected to computer bus 110, whether directly by bus link 125 or indirectly by signal communication 108 and communication link 120. The purpose of device 111 would be to actually implement the configurations developed using embodiments of the present invention. It is also possible that interconnect/programming device 111 could be a part of the circuitry suite permanently connected to the environment of the targeted [PSOC] device.

Please replace the paragraph beginning at page 13, line 8 with the following:

Figures 3, 4 and 5 are detailed illustrations of parts of the overall display shown in Figure 2. The display shown in Figure 2 is specific to the portions of device programming that would involve I/O pin configuration. Figure 3 is an illustration of pin-out window 207 which includes pin

diagram 300 and legend 211 which could be a color-code assignment to pin type. Legend 211 might also be implemented as a popup window. Pin diagram 300 is intended to give the user a graphic illustration of the device being programmed and, in this pin configuration oriented display, it is the I/O pins that occupy user's attention. Note that pin diagram 300 is illustrative of a DIP (dual inline pin) configured IC package. This particular illustration is just that, an illustration. The graphic is not intended to be used solely with DIP-configured ICs and is expected to be adaptable to many other package configurations. The DIP graphic, however, is well suited to presenting the user the necessary information and to accept the necessary user input to properly configure the I/O pins of a [PSOC] programmable device..

Please replace the paragraph beginning at page 17, line 1 with the following:

An alternative drive type could be selected from the drop-down list. If port type had been selected in the column headed by the word "Select", then a drop down button could appear in that window and, when it was picked, a drop-down list similar to window 401 could appear, offering the port type selection set. Pin parameter table 206 is presented in the user parameter table of the device configuration display illustrated in Figure 2. It offers an alternative method of device pin configuration and characterization. Note, again, that the labels and graphical content of the illustrated displays are intended for illustration and are not intended to limit the concepts presented in this discussion of this embodiment of the present invention to any particular fixed status. The concept here is the use of graphics, pop-up windows and drop-down lists in a GUI to configure the functionality of pins on a programmable logical device. 15. The example used in this discussion of embodiments of the present invention is a [PSOC] programmable microcontroller.

Please replace the paragraph beginning at page 18, line 19 with the following:

It is also important to note that, whether using the pin-out view or the pin configuration table, when a pin is selected, a pop-up window can appear that, as discussed above, presents options to the user. The selection set option first appears, as in window 400 in Figure 4, showing pin and port number and offering the selection of either pin type or drive type. Selecting either option can cause the appearance of the selection set associated with the option selected. A port type selection set such as that offered in window 401 of Figure 4 could appear if port type were selected. A drive type selection set such as in window 402 of Figure 4 could appear if drive type were selected. The salient point, in this embodiment of the present invention, is that a pop-up window with a drop-down list can appear to supply the available options so that a user is not required to remember everything about every part of a device being configured. This embodiment of the present invention, enabled here as an aid to configuration of a [PSOC] programmable device, uses and enhances the user-friendliness inherent in a GUI.

IN THE CLAIMS

Please amend the claims as follows:

1. (AMENDED) A method for configuring input/output connections in a programmable [logical] device, comprising:

displaying a graphical user interface enabled for said configuring of said programmable [logical] device;

selecting a configuration presentation from said graphical user interface;

selecting an input/output connection from said programmable [logical] device for configuration; and

selecting options for [said configuring of] said input/output [connections] connection from a selection set presented in said graphical user interface.

2. (AMENDED) A method as described in Claim 1, wherein said graphical user interface is tailored to a specific programmable [logical] device.

3. (AMENDED) A method as described in Claim 1, wherein said programmable [logical] device [is] comprises a programmable [system-on-a-chip] microcontroller.

4. (AMENDED) A method as described in Claim 1, wherein said configuration presentation [is] comprises a graphical presentation of a representation of said programmable [logic] device.

10. (AMENDED) A system for configuring input/output connections in a programmable [logical] device, comprising:

a computing device;

a graphical display device communicatively coupled with said computing device;

a graphical user interface implemented within said computing device and presented in said graphical display device;

a graphical cursor control device communicatively coupled with said computing device and enabled to input commands to said computing device through said graphical user interface; and

[a] said programmable [logic] device electronically and communicatively coupled with said computing device, wherein selecting specific points with said graphical cursor control device on said graphical user interface results in configuration data being generated for said programmable [logic] device.

17. (AMENDED) A system as described in Claim 10, wherein said programmable [logic] device [is] comprises a programmable [system-on-a-chip] microcontroller.

18. (AMENDED) A graphical user interface for aiding the configuration of a programmable [logic] device, comprising:

a device configuration window;

a user-selectable pin-out window in said device configuration window;

a pin configuration parameters table;

a pop-up window, comprising selection options pertinent to the configuration of said input/output connections; and

a drop-down list comprising selection options pertinent to the configuration of said input/output connections wherein said graphical user interface is enabled to accept user input commands in the process of configuring said programmable [logic] device.

20. (AMENDED) A graphical user interface as described in Claim 18, wherein said device configuration window is specifically tailored to program input/output pin configurations on a programmable [system-on-a-chip] microcontroller.

21. (AMENDED) A graphical user interface as described in Claim 18, wherein said user-selectable pin-out window is graphically configured in the form of said programmable [logic] device.

22. (AMENDED) A graphical user interface as described in Claim 18, wherein said pop-up window comprises selection options pertinent to the configuration of the input/output pins of said programmable [logic] device.